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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/522,974	02/01/2005	Robert Ashe	377.8168USU	2336
27623	7590	09/15/2009		
OHLANDT, GREELEY, RUGGIERO & PERLE, LLP				
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EXAMINER				
FLANIGAN, ALLEN J				
ART UNIT		PAPER NUMBER		
3744				
MAIL DATE		DELIVERY MODE		
09/15/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/522,974

Applicant(s)

ASHE ET AL.

Examiner

Allen J. Flanigan

Art Unit

3744

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 August 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-3, 5, 6, 9, 14 and 59-66 is/are pending in the application.
- 4a) Of the above claim(s) 59, 60, and 63-66 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-3, 5, 6, 9, 14, 61 and 62 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
- Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Claims 59, 60, and 63-66 remain withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 5/2/2008.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 attempts to limit the residence time of the fluid in terms of the length of the "heat transfer surface". This recitation is fundamentally ambiguous because length and time are incompatible units.

Claims 1-3, 5, 6, 9, 14, 61, and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watabe et al. in view of Matsugi et al.

The use of conduits provided on the external surface of a vessel for carrying out reactions is well known in the art as shown by Watabe et al. (they employ partition plates 3 disposed in the annular space formed between the vessel 1 and the jacket 2 that form a helical conduit/flow path). In Watabe et al., a single discrete helical flow path is shown.

Matsugi et al. show a similar heat exchange vessel for reactions in which partitions 7 formed in an annular space define one or more helical or

serpentine flow passages (9₁, 9₂). Matsugi et al. specifically suggest two or three spiral passages provided in parallel, with an appropriate number of inlet and outlets, and also discuss the advantages of providing a "plurality" of parallel passages wrapped helically around a reaction vessel (see lines 29-43 of column 3 of Matsugi et al.). Thus, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to replace the single helical passage in Watabe et al. with two, three, or any desired number of parallel, helically extending passages. The fact Matsugi et al. mention only two illustrative embodiments of plural passages (two and three) would not deter one skilled in the art from providing a greater number, to provide almost any desired degree of reduced residence time, reduced pressure loss, and minimized temperature drop/variation in a given application. The tradeoffs involved in providing more or less of these discrete flow paths would be well understood by the routineer in the art (such as the increased material required, and excessively small individual hydraulic diameter in smaller capacity applications). Further, the admissions by the applicant in the specification to the effect that a wide range of numbers of flow paths is suitable ("from 5 to many thousands") confirms that there is nothing critical in the narrower range now being claimed. Thus, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to provide any desired number of discrete, side by side helical flow paths extending in parallel in the jacketed reactor vessel of Watabe et al. See MPEP 2144.05 II.

Regarding claims 2, 5, 6, 9, and 62, these claims concern the intended use of the claimed apparatus; see the comments made in regard to these claims in the Office Action mailed 7/24/2008.

Regarding claim 3, as noted previously, the selection of appropriate dimensions such as tube diameters and other parameters in heat exchangers depending on a particular application is considered obvious..

Regarding claim 61, note the feature disclosed in Watabe et al. regarding varying the spacing of the partition plates to change the flow diameter of the passage, which will effectively vary the heat transfer surface for the passage as well.

Applicant's arguments with respect to claims 1-3, 5, 6, 9, 14, 61, and 62 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen J. Flanigan whose telephone number is (571) 272-4910. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Allen J. Flanigan/
Primary Examiner, Art Unit 3744